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In This Issue

THE SCIENTIFIC MANPOWER SHORTAGE—A PERIL TO AMERICA ..... John T. Rettaliata 17

THE SCIENCES AND THE HUMANITIES: COMMON CRITERIA ..... Otto Krash 20

NEW TIMES, NEW BATTLES ... Harry S. Broudy 22

COW PATH OR CONSTELLATION? Douglas Rugh 25

EDUCATIONAL PSYCHOLOGY IN DENMARK John F. Ohles 27

Events: Child-Rearing and Child Behavior; Core Curriculum for College Undergraduates; Integration of Liberal Arts and Nursing Education; Papers of W. W. Charters; Moscow University's 200th Anniversary 28

Notes and News: 30 *Recent Publications:* 31

The Scientific Manpower Shortage—A Peril to America

By JOHN T. RETTALIATA

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THE UNITED STATES, for the first time in many years, finds itself confronted with the unusual and unpleasant fact that its technological superiority—at once the foundation of our national security and the highest standard of living ever known—is threatened by forces which would destroy the American way of life. Undoubtedly, the strength of the United States as the principal barrier to the communists in their admitted ambition for world domination is due primarily to our achievements in technology.

America has long rested secure in the knowledge of its technological advantages, but in each of the last several years there have been marked declines in the numbers of engineers being graduated from its colleges and universities. During these years, Russian institutions have been turning out substantially larger numbers of technologists, with the result that our leadership is being seriously challenged.

At present, our country has the advantage in scientific and engineering manpower. This is estimated at something in excess of 100,000 engineers and scientists more than Russia, but the best available figures on what is happening behind the Iron Curtain make it apparent that our leadership is slim, indeed.

From 1951 to 1954, inclusive, the universities and colleges of this country graduated some 116,000 engineers. In Russia, the reported total for the same years was 154,000. Last year's total here was about 20,000 against 54,000 in the Soviet Union.

To meet the current needs of our domestic

economy, industry should have an annual supply of 30,000 new engineers—thousands more than graduated last year or will do so this year. Future productive capacity will be taxed to the utmost to satisfy the requirements of a population predicted to reach 200,000,000 by 1975.

It is therefore time that we appraise some of the factors which are adversely affecting the education and development of sufficient numbers of technically trained people and explore procedures that might be used to relieve the critical manpower crisis that faces us.

High-school curriculum. Educators are discouraged by the fact that many high-school students, when approaching graduation, decide that they would like to pursue science or engineering in college but find, too late, that they do not have the prerequisite courses. Frequently, students remark that they were not aware, when entering high school, of the type of program they should have taken to prepare themselves for science or engineering in college.

It is widely known that there is a pronounced trend in the high schools toward more general education, at the expense of mathematics and science, the prerequisites for engineering and science studies in the colleges.

The decline in the study of physics, the importance of which in our national life increases almost daily, is a striking example. According to the National Education Association, the percentage of high-school students enrolled in physics classes dropped from 22.8% in 1895 to only 5.8% in 1948. Since physics usually is studied only by seniors, this means that more than 75% of the high-school population has no contact with this subject.

To remedy this situation and, thereby, to increase the supply of scientists and engineers, I suggest a high-school program which would give good preparation for college work in science and engineering. Many variations could be suggested, such as shop work, etc., but I feel that this program would give a proper background for a future scientist or engineer.

Some educators feel it is undesirable to prescribe the high-school program too closely. They refer to the investigations that indicate that there is only a remote relationship between good performance in engineering college and the pattern of high-school subjects. A better indicator, it has been pointed out, is general quality of high-school work.

However, for a student intending to pursue engineering in college it is considered desirable that at least nine units be prescribed: three in English, three in mathematics, two in science, and one in history, out of a total of 15. The four units of mathematics, shown in the table, would be very desirable, but it is believed that a requirement of this number, at this time, would exclude or discourage many potential engineering candidates and thus adversely affect the supply of engineers. Consequently, as indicated above, only three units of mathematics are stipulated as being required.

TABLE 1

SUGGESTED HIGH-SCHOOL CURRICULUM FOR STUDENTS INTENDING TO FOLLOW ENGINEERING AND SCIENCE PROGRAMS IN COLLEGE

Freshman Year

1st Semester		2nd Semester	
Subject	Unit	Subject	Unit
English	½	English	½
Algebra	½	Algebra	½
Foreign Language	½	Foreign Language	½
World History	½	World History	½
Art	¼	Art	¼
Physical Education	¼	Physical Education	¼
	2½		2½

Sophomore Year

1st Semester		2nd Semester	
Subject	Unit	Subject	Unit
English	½	English	½
Geometry	½	Geometry	½
Foreign Language	½	Foreign Language	½
Biology	½	Biology	½
Music	¼	Music	¼
Physical Education	¼	Physical Education	¼
	2½		2½

Junior Year

1st Semester		2nd Semester	
Subject	Unit	Subject	Unit
English	½	English	½
Advanced Algebra	½	Solid Geometry	½
Chemistry	½	Chemistry	½
U. S. History	½	U. S. History	½
Mechanical Drawing	¼	Mechanical Drawing	¼
Physical Education	¼	Physical Education	¼
	2½		2½

Senior Year

1st Semester		2nd Semester	
Subject	Unit	Subject	Unit
English	½	English	½
Trigonometry	½	College Algebra	½
Civics	½	Civics or Social Studies	½
Physics	½	Physics	½
Physical Education	¼	Physical Education	¼
	2¼		2¼

High-school motivation. The search for talent and interest in a scientific or engineering career should begin in the higher elementary grades, and it is at this point that the teacher plays a vital role. Students should be convinced that science and mathematics are not unduly difficult. Courses should be made interesting through demonstrations and repeated

references to everyday applications of the principles being studied. Interest can be promoted through student participation in scientific projects.

Industry can help by arranging inspection trips of plants and laboratories for science teachers and students so they can observe application of scientific principles. Industry also can furnish speakers on occasion, offer summer employment to teachers, and help in evaluating course material. Such activities not only will benefit the teachers and students, but will be good public relations for the company.

If students are made aware of the opportunities in science and engineering, many of them will become interested in careers in these fields.

Science teachers. More people must also be motivated to teach these scientific subjects. The National Education Association estimates the present need for new science teachers at 7,700 a year. The ranks are being filled at approximately one third of that rate.

The basic motivation to adopt a science teaching career should be the importance of the undertaking and the personal satisfaction and rewards derived. But in order to attract recruits to the field the salary should be adequate.

College motivation. Unless the high-school graduate ultimately completes his college work, it is unlikely that he will become a scientist, engineer, or teacher. If the shortage in such categories is to be alleviated, the gap from high school to college must be bridged.

From an ability standpoint, the top 25% of the high-school graduates should go to college. Yet, only one half of this group does so. This is the area which should be cultivated to procure additions to the ranks of engineers and scientists. Some students just are not interested in going to college, and these should be counseled on the advantages of a college education.

The pattern of attendance between public and private institutions of higher learning indicates that the cost of education is an important factor in many cases.

The tax-supported institutions, with their lower tuitions, are attracting an increasing proportion of the college student body. Enrollment statistics from the U. S. Office of Education show that in the fall of 1952 the tax-supported institutions enrolled 7.5% more students than the private colleges and universities. In 1953, this figure doubled, and in 1954 it went to 27%.

Much is being done to render financial assistance to worthy students through scholarships, loan funds, and part-time employment

SCHOOL *AND* SOCIETY

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while in college. More scholarships are needed. It is suggested, however, that they be financed by industry and the state and not by the Federal government. Federally-sponsored veterans' aid education programs have been satisfactory, but outright Federal subsidy of scholarships, with its attendant possibility of interference, is not to be desired.

Higher education's responsibilities. Higher education, especially technological educational institutions, will carry a heavy responsibility for developing America's stockpile of scientific and engineering manpower. They should not only teach, but should encourage an increase in the supply by attracting students. They should also maintain communication with high schools and junior colleges to facilitate proper articulation of scholastic programs.

In co-operation with industry, the colleges can sponsor meetings and seminars for secondary school science and mathematics teachers to point out the importance of technological education to the American economy. Thus, the teachers will be better equipped to recognize and encourage engineering talent among their students.

The colleges also can offer summer and evening refresher courses of interest to science teachers. They can conduct evening student programs and in-plant extension programs to up-grade employees who do not have the opportunity to attend day classes.

Close attention to the qualifications of the technical teaching staff is vital, for ineffective ones may be responsible for students failing in, or abandoning, their course of study. Faculty members must have sympathetic understanding of student problems, sincere interest in their charges' intellectual growth, and qualities of leadership which inspire.

Draft deferments. There is need for reappraisal of our military draft policies as they affect higher education. Generally, college students with satisfactory scholastic records are deferred until they finish their undergraduate work, but graduate study is having difficulty in retaining students because of deferment policies of some local draft boards.

A recent Selective Service amendment, pertaining to deferment for graduate study, changing class standing from the top half to top quarter and qualification test score from 70 to 75, aggravates the situation further.

It is serious when students who have the ability and desire to pursue advanced study are prevented from doing so because the best candidates for future scientific and engineering leadership must have graduate training. It is in the graduate field that the real contributions toward fundamental research are made.

Selective Service deferments should not be regarded as granting privileges to a few, but as a means of enhancing the security of the many. Engineers and scientists constitute less than one half of one per cent of the population. Yet, this limited group is relied upon to advance the standards of living, to create new and ever more powerful military equipment, and, in general, to be responsible for our national security.

The task before us is to apply broad, positive remedial action as soon as possible to assure continuance of the technological competence upon which our future progress and, in fact, our very survival depend.

The Sciences and the Humanities: Common Criteria

By OTTO KRASH

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CONTINUOUS JUGGLING for priority among the sciences and humanities has run a course for many years in American educational circles with no appreciative diminution in the timeliness of the debate. The humanities claim that the point at issue is one of breadth and depth of learning, while the sciences insist that it is the need for increased numbers of scientists and engineers.

Both claims are advanced in answer to the Iron-Curtain threat to Western leadership in world affairs. It is edifying that the advocates of both positions direct their analyses to as basic an issue as world leadership.

In their analysis of the issue, the proponents of the humanities achieve a complacent attitude toward progress in Iron-Curtain science and engineering by suggesting that the humanities are fundamental to an education in the sciences and that this foundation is missing from Soviet technical education. For example, President A. Whitney Griswold of Yale University has stated that "a powerful revival of the liberal arts in our schools and colleges" could be the "secret weapon in the cold war."

But can we locate criteria in the humanities with which to judge programs of education and the increased specialization within the sciences? The financial effort expended by our foundations, the Government, and industry to promote scientific research and technological skills reveals none of the complacency advanced by the humanities and the liberal arts. There is, rather, the evidence of continued dissatisfaction with such criteria as "broader wisdom," "breadth and depth of learning," "well-grounded education," or "the liberal arts as a secret weapon in the cold war."

The strengths of the analysis provided by the sciences rest primarily in the advance of knowledge through continued specialization. Let us grant that "additions" to knowledge enable us to extend our analyses of new problem areas and often lead to solutions that are significant in human affairs. However, the sciences may run afoul of practicalities, becoming immersed in quantification for quantification's sake and detached from the scientific method of inquiry that provides purpose for measurement. Then, too, as in the case of some political science, theory is propounded without being assessed in terms of the sordid facts of action.

The strengths of analysis provided by the humanities rest primarily in alternative methods of inquiry that help to organize vast quantities of data and fact.[1] The alternative methods of inquiry employed in the humanities provide fertile suggestions and the possibility of new roads of analysis. But we must admit the case of the sciences against the humanities whenever it is difficult to discover a realistic confrontation of practical problems commonly regarded beneath the professor's pen and attention. Scientists also indicate a weakness in the humanities whenever they find historians who overlook data that would disturb and upset their hypotheses (as in Toynbee).[2] Other illustrations of weakness are indicated wherever accuracy is assumed to follow from perfectly logical forms that are based upon mistaken propositions.

Where are we to look for criteria with which to evaluate programs of education—in science and engineering, in the humanities, in some subordination of one to the other, or in an integration of one in the other? Is there something uniquely human in the humanities and something speciously inhuman about the sciences, something practical and knowledge-forwarding in the sciences and something impractical and merely speculative in the humanities? If these charges and counter-charges contain an element of truth, there is need for other and more adequate techniques of analysis. What techniques of analysis are required in dealing with the weaknesses of these arguments?

A source for new techniques of analysis may be indicated in the suggested weakness in both the sciences and the humanities when these studies avoid specific research into alternative methods of human thought. What are the methods of inquiry employed in the sciences and the humanities? A study of these methods would not be entirely new. And we should be led to philosophic literature devoted to an analysis of methodology. Of course, true to philosophic tradition, we would be met by conflict among methods. Methodology would reveal alternative methods of inquiry, namely, the methods of intuition, authority, and evidence. Under these circumstances would methodology, as a disci-

[1] Some claim that the significant contribution of the humanities is in the qualitative studies of experience, namely, the arts. However, for the purposes of this paper, which is directed toward analysis, the qualitative domain is precisely what it is that the theories of science assist us to organize. To this writer, at least, the work that will forward accurate analysis in the realm of the arts is the kind done by F. T. Villemain of New York University in "The Qualitative Character of Intelligence" (Teachers College, Columbia University, 1951), Ed.D. thesis. Villemain forwards the skills of the artist as controlled qualitative knowledge, thus reducing mystery that is usually present in accounts of artistic activity.

[2] See discussion between Geyl and Toynbee in "The Pattern of the Past: Can We Determine It?" by P. Geyl, A. J. Toynbee, and P. A. Sorokin (Boston: Beacon, 1949).

pline in philosophy, assist us in locating adequate educational criteria? Should we make use of intuition or authority when these methods offer the techniques of power and acceptance for resolving conflict? In all the course of Western civilization, we have had continuous resort to these techniques. They are contributions to a politically divided world where compromise is sought through a balance of power or "situations of strength."

But what is our purpose in achieving compromise? Do we wish to protect intuitional values or particular authorities? Or are we committed to a method of thinking that is supported by evidence? Do we advocate the use of compromise in order to gain commitments to evidence as the means for forwarding inquiry? Are we not committed to the value of free inquiry grounded upon evidence that is shared? Is the method of evidence, the great value of Western civilization that is worth extending into the future, worth extending, because evidence goes beyond the methods of intuition and authority to arrive at conclusions that are infinitely sharable? If this is, indeed, the case, then the weaknesses of methodology as a discipline of knowledge may be dispelled by the development of a "science of methodology" that rests on a conception of evidence as the support for inquiry. This method is employed throughout all of contemporary civilization: witness its extension into the practises of the Iron Curtain countries and into the East. The extension is admittedly partial, limited to certain areas of human conduct. A science of methodology would propose the extension into all areas. This method of inquiry is also employed in both the sciences and the humanities and is, therefore, a criterion common to both.

The science of methodology, then, becomes a common criterion to be used in developing scientists and engineers who could be superior to those in the Iron Curtain countries. Evidence, as the ground for a truly free method of inquiry, could capture the imagination of the peoples of the world. For in many parts of this world inquiry is subservient to political authority and is not open to all men. The criterion of evidence, common to all, has been nurtured in Western civilization and is being sustained in the free world. This great value of Western culture is worth forwarding into the future on a world-wide scale. A science of methodology would be directed to the pursuit and extension of knowledge into significant problems of world order: the achievement of peace, the alleviation of poverty, the development of adequate housing, and the attainment of equal opportunity in education.

A science of methodology is being suggested here as a new kind of analysis into the seemingly endless and irreconcilable debate between the sciences and the humanities. This new specialization provides common criteria for evaluating programs of education that are designed for a world of free men.

New Times, New Battles

By HARRY S. BROUDY

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HISTORIANS will scratch their heads hard and long to decide just what it was that American educators of the first half of the 20th century argued so vigorously about. It would not be surprising if they selected the following issue: Shall the formal school devote itself primarily to the teaching of organized subject matter, or shall it devote itself to the activity of problem-solving? Certainly this question reflects our numerous and diverse controversies over theories of learning, epistemology, metaphysics, social and political ideals, and value theory. Indeed, it serves as an admirable illustration of how winds of doctrines blowing at all levels and in all directions ingress as vectors into the educational theories and practices of an epoch.

In this war, as in other long drawn-out contests, the combatants have come to know each other quite well. The arguments have been sharpened and refined in use, but they have been used so often that each side can anticipate every thrust of the other and be ready with a parry and thrust of its own.

To the charge that algebra and history are

ognize in a single intuition that tires, when flat,

If we now re-examine what it means to *master*

too remote from children's interests to whet their learning appetite, the rejoinder is that the world is run by adults and that the point of schooling is to end the infancy of pupils, not to prolong it. To the charge that the problem-solvers go round and round in a circle of irresponsible relativism, it is retorted that it is the going that counts rather than the destination.

One side argues that the play's the thing and that the school is a rehearsal for it; the other, that the rehearsal's the thing and the play a convenient way of getting it under way. One side prides itself on the possession of at least a few eternal verities; the other calls this blind dogmatism. One side glows with its democratic vision, but this is called "vulgarization" by the opposition. It is all quite familiar by now and, to many, no longer exciting.

Along with a certain battle weariness has gone the normal amount of mutual infiltration and fraternization. As the older heroes retire from the field, the younger warriors begin to feel their oats and venture to question the strategy of the generals. Numerous amalgamations of the subject-matter and activity approaches can be found in schools that call themselves anything from traditional to ultramodern. On a higher theoretical level we find numerous attempts to unite the two approaches into some kind of synthesis.[1]

But if there has been a mitigation of hostility at the center, it has not ended the war. There remain hard loyal cores passionately devoted to the respective causes. This might not matter too much if it were not for two factors. One is that the two approaches *have* to be synthesized. Each is too strong and too valid to be routed completely. The die-hards and bitter-enders are naturally not very helpful in such an enterprise. The other factor is that strong forces are attacking public education from a variety of motives and with varying degrees of misguidance. A half-century of fighting has left neither side wholly invulnerable. Each side at one time or another has served as the unwitting ally of the common enemy. One of the somewhat comical yet dangerous consequences of the situation is that the problem-solvers have tended to appropriate liberal democracy as their exclusive possession, while the subject-matter extremists have appointed themselves exclusive guardians of knowledge, intellect, and moral standards. This certainly is *not* where the battle line should be drawn.

Perhaps the most distressing result of the long controversy is that certain theoretical postures have become so taken for granted that it is difficult to get anyone to examine them afresh. In particular it has been assumed that in "mastering" an organized subject such as chemistry or history the learner appropriates directly the facts and principles of the discipline as "given" to him. The study of organized subject matter is consequently labeled as "mere memorization of facts." Once this is admitted, horrible consequences ensue: low retention, poor motivation, remoteness from everyday interests, mere traditionalism, abstractness, verbalism, and, worst of all, a hatred of school.

On the other side, it is taken for granted that problem-solving as analyzed and described by John Dewey in "How We Think" is sheer *process*—a ceaseless shuttling between data and hypotheses, evaluation and testing, new data and new hypotheses. The nature of the problem is regarded as less important than the solving of it, and the solving of it, less important than the new difficulties (problems) it engenders. It is confidently asserted that no formal subject matter is needed to carry on this process; indeed, that this is the only effective way of acquiring what is valuable in a subject matter.

The reiterated emphasis on the static, perfected, organized, universal, intellectualized features of subject mastery and the counter emphasis on the dynamic, experimental, emerging, concrete, practical features of the problem-solving process have made it virtually impossible even to look for the relation between these two modes of truth-finding and truth-testing.

It is illuminating to reflect on how much knowledge problem-solving entails, and how much thinking the mastery of a subject requires.

Such reflection will show that Dewey's complete act of thought proceeds from point to point by "quanta" of insights. If, from hearing a series of rapid thuds, I infer that my right front tire is flat, then I must recognize thuds and rec-

[1] As yet no such attempt has captured enough adherents to be called a new movement. Instead, there are many ferments in many graduate seminars. The younger men are less eager to be disciples and more intent on analysis and technical criticism. Even a casual reading of the last few years' issues of *Educational Theory* and SCHOOL AND SOCIETY will illustrate the point.

of informally acquired generalizations. It is that such a society will demand different types

ognize in a single intuition that tires, when flat, thud; that I am in an automobile and therefore that this is my tire thudding. Just as in a mathematical demonstration I have to keep in a *single* consciousness the "if . . . then" sequences, so in any problem-solving there are perches of insight between which thought jumps. In thinking, as in reading, we "see" only when the eye perches; when we appropriate with the mind what is there to be known. This property of learning is not peculiar to the learning of organized subjects. Until the learner *sees* how the hypothesis follows from the evidence and sees it in a unified insight, thinking gets nowhere.

The second point to which our reflection leads is that problem-solving relies at every step on generalizations. That flat tires thud when moving is a generalization familiar to most Americans. When I ask myself how I shall change the tire without ruining a newly pressed suit, I am invoking generalizations from my experience. When I frame hypotheses to the effect that if I walk a mile I shall encounter a gas station, I am relying hopefully on certain generalizations.

From where do these generalizations come? From common experience or from the organized knowledge of the world—organized in subjects, if you please—or some combination of both. To argue that there are some problems that we can solve without such organized knowledge does not prove that all important problems can be so solved. Indeed, none of the problems of modern science can be so solved, and day by day fewer of our important social and political problems can be solved by the man on the street or with the benefit of a cracker barrel.

If problem-solvers do not care what *kind* of problems pupils solve in school or hope to solve in life, then it matters little what is done in school providing only that it is problem-solving. In that case, however, they must not be surprised to have the charges of triviality, whimsicality, capriciousness, soft pedagogy, and anti-intellectualism tossed at them.

If the proponents of the problem-solving curriculum *do* care about problems that require something more than common sense generalizations, then they will have to accept formal study of organized subject matter as an almost indispensable source of such generalizations.[2]

[2] This needs argument and I have tried to furnish one in "Building a Philosophy of Education" (New York: Prentice-Hall, 1954), chap. 6.

If we now re-examine what it means to *master* a subject, it is obvious that it must mean more than the appropriation by rote memory of certain selected statements from that subject. For example, history-mastery cannot mean merely the memorization and reproduction at will of a given number of historical statements.

What else is it to mean? The answer to this question need not be very profound. Every subject was built up by investigators who were solving certain kinds of problems: historical, geographical, chemical, etc. There were data to be defined and classified; hypotheses to be invented, evaluated, and tested; controversies to be carried on and methods of investigation to be perfected. The paragraphs in the textbook are the crystallized products of such *thinking*.

True, learners cannot re-enact the labors of the pioneers, but a sense of how the discipline was built up, its methods of investigation, modes of explanation, its areas of doubt, and fields of relevance are surely part of what is meant by anyone who takes the notion of "mastery" seriously. The learner, to some extent, rethinks a subject in mastering it. In doing so, he discerns the theoretical structure that makes every organized discipline a conceptual network with relations to other conceptual networks of knowledge.

What, then, is the relation between problem-solving and subject mastery? I think it can be shown that these approaches are not equivalent. Nor is it clear that they have the same outcomes, nor that they are aspects of each other or of some third entity. What seems to be the case is that discovering knowledge, appropriating it, testing it, and using it to guide action are related to each other as parts to wholes and as causes to effects.

Generalizations, for example, are a *part* of a problem-solving sequence that has decision as a goal. On the other hand, a discrepancy between data and an accepted generalization may get a very fruitful problem-solving process under way. Science is made up of instances in which problem-solving with theoretical intent and high competence (and possibly a touch of good fortune) eventuate in new generalizations. These find their way gradually from the laboratories and desks of scholars into textbooks for students. Problem-solving and subject mastery are, therefore, indispensable to each other whenever the problem situation will not yield to the resources

of informally acquired generalizations. It is futile to try to reduce one type of curriculum to the other, because each furnishes the rationale of the other, and each affects the content and quality of the other.

If this is so, then our problem can be reformulated as follows: How can a subject be taught so as to make its data, methods, and results freely available to the learner's attack on the problems of life? How can we incorporate problem-solving activity in schoolwork so that it brings the knowledge of subject matter to bear upon the achievement of the good life in the good society?

If we address ourselves seriously to these two questions, then we can envision at least three types of activity for professional education:

We shall have to re-examine both the subject matter and the problem-solving segments of the curriculum so that they will give us an answer to the two "hows." For example, the consideration of different types of problem-solving and different levels of abstractness in subject matter as related to each other and to individual differences promises an impressive, albeit somewhat alarming, array of doctoral dissertations.

We may have to transpose our entire educational symphony into a new key—the key required by mass production, mass democracy, and the bureaucratic, tightly co-ordinated social order these entail. It has already been noted[3] that such a society will demand different types of character from those that promised success and survival in the 19th century.

Because the "new" personality required by the "new" democracy has not yet permeated all of our people, certainly not all of our influential ones, conflicts are inevitable. Much of the current criticism of the schools reflects such a value-confrontation. Liberal arts professors are afraid lest pupils busy themselves exclusively with problems that never transcend the resources of the radio, television, and the street corner. The life-adjustment advocates are afraid lest pupils, especially book-shy pupils, be condemned to verbalisms and abstractions remote from the urgent stresses and dislocations of American adolescence and adulthood.

It will be up to the professional educators—theoreticians, engineers, and administrators—to convince all parties, including themselves, that they have the knowledge, personnel, and courage to deal with the problems in these three areas. Such, it seems to me, may be the educational battle in the last half of this century. It is to be hoped that the new battle will align all who are sincerely for the best education we can devise (despite their doctrinal differences) against those who are willing to settle for a good deal less.

[3] *Cf.* The work of Erich Fromm, Karl Mannheim, David Riesman, among many others. W. O. Stanley brings much of the material together in "Education and Social Integration" (New York: Teachers College, Columbia University, 1953).

Cow Path or Constellation?

By DOUGLAS RUGH

Teachers College of Connecticut, New Britain

THE CURRENT national trend toward a fifth year for teacher education provides a stimulus for reviewing the whole professional curriculum. The consequent reorganization of teacher education curricular patterns might be as radical as was the conversion of the lock-step normal school course of several decades ago into the four-year baccalaureate program.

Will it be the turning point when a century and more of experience in teacher education is to be incorporated into a pattern of professional training that will give America the kind of teachers she needs and wants?

Three different kinds of experience have led the writer to form some opinions about the current patterns of professional curricula in teachers colleges. These experiences include advising liberal arts graduates in an Emergency Teacher Training Program, serving as a member of a teachers college curriculum committee, and serving as chairman of a department offering professional courses.

It is a sobering experience to be on a curriculum committee, a committee that is necessarily cautious, deliberate, and circumspect. Tinkering with a college curriculum could be as dangerous for education as meddling with the constitution might be for the stability and security

of the country. Also, one soon finds that even the members of a curriculum committee represent, to some extent, vested interests, prestige, and status factors, as well as simple prejudices that are founded on no generally accepted educational doctrine. Nevertheless, recommendations for curriculum changes and improvements do emerge from these committees and the curriculum evolves accordingly.

As for being a department chairman, one has some responsibility for arranging the offerings of the department in a sequential order that is logical and defensible. There is evidence of some agreement on a few curriculum essentials.[1] There is also much more evidence of diversity and variation which indicate creative imagination. This writer has found no less than five different professional sequence patterns or arrangements now being followed on the campuses across our land.[2] A review in brief of these varieties might serve as a prelude to reorganization.

The Cow-Path Pattern. As the name suggests, this pattern of professional sequence is an unplanned growth like the streets of Boston. Some of the courses undoubtedly once had a reason for being where they are. Later developments have obscured and even invalidated that reason, but the pattern persists. The professional requirements appear in a haphazard order along the academic highway, like tufts of grass from wind-blown seed. The pattern is indeed picturesque, but by no means does it represent the shortest or best path between two points: the novice and the professionally prepared teacher. General principle courses for incoming freshmen, as well as the psychology of learning, in the first year are examples of such accidental patterns.

The Numerology Network. Somewhat akin to the Cow-Path Pattern, and with even less *raison d'être,* is the professional sequence which depends primarily upon the course numbers. To some degree it reigns in all colleges. The network may start by granting full authority to an individual or department to assign course numbers. The course may then change but the numbers never! They are frozen into a sacrosanct system from which they can be extricated only by a major operation.

The fallacy in this pattern is obvious. The numbers of certain courses have, by virtue of tradition and certain halo effects, become more important than the courses themselves. Initial errors in course placement can thus become congealed in the catalogue numerology under such a pattern and continue for generations to confuse students. It is under this kind of a pattern that seniors find themselves taking freshman courses (with senior numbers, of course) and sophomores and juniors find themselves subjected to a melange that is a sequence in Arabic numerals only.

The Homogenized or Diffused Pattern. This pattern appears to be a consequence of attempting to professionalize the whole four-year curriculum by spreading professional courses evenly along the four-year route. By diffusion these are intended to professionalize all subject matter in each term and create a pervasive professional aura. This might be viewed as a reaction against the old normal school curriculum when all the methods courses were concentrated in one or two years. Sometimes this pattern is defended as a protection against the general education courses becoming too compartmentalized and divorced from teacher preparation objectives.

The Trailer Pattern. This is probably most dramatically exemplified by the "bold experiment" now in progress in Arkansas, with the help of Ford Foundation funds. It consists of the four-year liberal arts education with a fifth year devoted entirely to professional courses and practice teaching. The professional sequence is hooked on as a trailer. It is a mechanical joining without any assurance of functional integration, but the Arkansans have wisely reserved the right to evaluate in due time this trailer pattern against their regular teacher education curriculum. The various types of "Emergency Programs" for liberal arts graduates are also in the trailer category.

The Cluster or Constellation Pattern. This pattern might be rationalized in terms of Gestalt psychology, the perception of patterned wholes and the principle of closure. We find in this type, three, or more professional courses grouped into sequences that seem to have an organic unity

[1] *Cf.*, F. E. Engleman, SCHOOL AND SOCIETY, Aug. 7, 1954.

[2] *See* "Study Areas of Possible Interest to Colleges for Teacher Education," American Association of Colleges for Teacher Education, Oct., 1954. "Professional sequences" ranked first in extent of interest.

and interrelationship of content and meaning. They hang together in a more magnetic pattern than one realizes when viewing them from outside. It is these courses which seem to provide teachers with what are called operational concepts. The sequence of child psychology, adolescent psychology, and the psychology of learning now offered at this college approaches the constellation pattern. The theory and practice are so closely intermeshed that transfer of training occurs more often than not—a phenomenon of the first pedagogical order! The professional firmament is probably most effectively illuminated by such clusters and constellations.

All these patterns are now in use in a sort of happy heterogeneity at our teachers colleges. They have managed to maintain a rather peaceful coexistence, sometimes even in the same institution. The American teachers' college has come a long way since the first normal school was opened in Concord, Vt., in 1823. What happens in the next five or 10 years may set the pattern for the century to come, not only for teachers but for our children's children. Perhaps the leaders in teacher education need to perform what the English physicist and novelist C. P. Snow states is the function of novelists: "Face today's world and link mankind to it," not only by cow paths but also by constellations.

Educational Psychology in Denmark

By JOHN F. OHLES
Cambridge, Mass.

DANISH EDUCATIONAL psychologists have been setting a pattern for the Scandinavian democracies since 1924 with the establishment of the Committee for School Psychological Investigations for close co-operation between educational organizations and psychologists. Besides stressing the kinship of psychology and education, the committee has produced standardized Danish versions of the Binet-Simon scale and various achievement tests. This spadework was followed by increased use of psychologists by the schools and the employment in 1934 of Denmark's first officially designated school psychologist. In a country politically influenced by renowned Scandinavian social consciousness but educationally dedicated to European traditions, psychological theory was put to a severe test. Its success was measured by the employment of school psychologists, a five-fold increase in enrollment in the lengthy psychological course at the university from 1931 to 1942, a rapidly growing pro and con in educational literature, the passage of a law in 1937 providing for the organization of special education for retarded children (dependent on the assistance of trained school psychologists), establishment of a year's course in psychology at the Danish Teachers College in 1940, and the organization of Danish School Psychological Publishers who have, to date, published 17 psychological books, original Danish works, as well as foreign translations.

An educational psychology course was instituted in 1944 at the University of Copenhagen because of the improbability or impossibility of supplying trained school psychologists through the advanced Magister degree which was considered "too extensive and to difficult for a school psychologist."[1]

Previously, the university had separated itself from the masses by admitting only students, *i.e.*, graduates of the select Gymnasium (about five per cent of primary graduates). The majority of the teachers attended teachers colleges requiring only pre-Gymnasium schooling. Now holders of the Teachers Examination with three foreign languages (English, German, and French) are admitted on an equal basis with students, but by the Psychology Laboratory (not the university itself). A new degree, *Cand. Psych.*, was adopted, substituting required attendance for examinations in some courses. This eliminates any possibility of acquiring the degree through admission and passing of tests.

The three-year program provides instruction in general, educational, child, and adolescent psychology; psychology of elementary subjects; reading, spelling, arithmetic, and writing diffi-

[1] Trankejaer-Rasmussen, E., "Redegoerelse for det Nye Psykologisk-Paedagogiske Studium ved Koebenhavns Universitet," *Paedagogisk-Psykologisk Tidsskrift*, 4: 113, 1944.

culties; and adolescent delinquency, experimental psychology, statistics, child psychiatry, animal psychology, psychotechnics, genetics, psychological observation, social psychology; psychology of the blind, deaf and speech defective; child welfare, neurobiology, and practical psychology. The program's 41-item bibliography contains 16 German, 12 Danish, one Swedish, nine English, and three French works, with 15,000 to 30,000 pages of required reading. This program, scheduled only in the afternoons for teachers, suggests the difficulty of attaining the level of comprehension demanded by European standards of university scholarship in three years. The only comprehensive practical course in psychology in the country, it is expected to serve other psychological needs such as child welfare, youth recreation programs, hospitals, industrial plants, prisons, military establishments, vocational guidance services, etc.

The study plan has been under revision since 1950. While certain alterations appear to be generally accepted, *i.e.*, extension of the course to four years and increased practical work at the university's Child Psychology Clinic, supported by the Rockefeller Foundation, delay in final revisions may be due to more basic problems. The most important of these is a shortage of established school-psychologist positions, so that many *Cand. Psych.'s* cannot make use of their training. Apparently, the establishment of psychological services does not keep pace with acceptance of its principles in Denmark any more than in the U. S.

It will be interesting to follow educational psychology in Denmark and to compare its progress with that in this country, particularly in the lower schools. Perhaps the school psychologist will concentrate less on teacher-referred educational and behavioral problems than on the mental health of all children. Possibly even the secondary schools and the universities and professional schools will conserve human resources through applied psychology. Indeed, the potential influence of a developing educational psychology in Denmark may prove to be even more fascinating than that of its American counterpart.

EVENTS

Child-Rearing and Child Behavior

EVEN THE CASUAL observer of the American scene must have noted the freedom which has been increasingly bestowed upon children during the past three decades. The strict uncompromising parent and teacher have given way, as a rule, to those who have adopted the principle of permissiveness—the term now in vogue—in their relations with the growing generation.

Gone are the rigid standards of dress and address. Gone, apparently, is the precise distinction between youth and age; the young try to look grown-up as soon as possible, while the aging are determined to retain the appearance of youth for years after their physiognomic prime. Expressed in historical terms, the child has once more become a miniature adult (shades of Rousseau!) and the adult is striving, and often succeeding, in attaining a second childhood.

To concentrate on the children, there would be little cause for complaint if the policy of permissiveness had resulted in an assumption of adult standards of action by the oncoming generation. Such, however, is unfortunately not the case; privileges and responsibilities do not have a positive correlation as yet. This is less a lament than a reporting of the facts.

Among the many concerned with child growth and development are some who do not follow the trend of the times. To these, a child is a child and should be treated as such. One of the recent articulate voices in behalf of this viewpoint is that of Douglas M. Kelley, professor of criminology at the University of California (Berkeley). A psychiatrist who served at the trials of the Nazi war criminals at Nuremberg, Dr. Kelley stoutly maintains that the methods of child rearing prior to the Age of Freud may have inhibited the child, but they at least taught him reason-

able standards of behavior. The Freudian notion that children should be subjected to as little discipline as possible has been a major reason of the rise of delinquent behavior among youth, according to him. This policy of child-rearing has tended to perpetuate an immaturity of behavior which results in destructiveness and other psychopathic actions.

As this eminent psychiatrist sees it, we must reject both extremes of dealing with children. He admits that the "old-fashioned" method of maturation of children by training self-control may produce a generation of neurotics, but claims that it will reduce the number of psychopaths and delinquents. Parents—and, we might add, educators—must be re-educated, he feels, in the direction of more rational patterns of child upbringing.

Educators, such as the late William Chandler Bagley, have long been protesting against the unchecked permissive attitude toward child behavior on the part of parents and teachers. These views have not been granted much of a hearing in educational circles. Perhaps such a statement as that by Dr. Kelley may serve to remind the rearers of children that their procedures should be examined under a critical microscope. The "Howdy Doody" and "Davy Crockett" youngsters will be prevented from degenerating into "Blackboard Jungle" adolescence by firm, benevolent, rational methods of training, rather than by excessive permissiveness and blind sentimentalism.—W. W. B.

CORE CURRICULUM FOR COLLEGE UNDERGRADUATES

THE UNIVERSITY OF PITTSBURGH will inaugurate next fall, under a $175,000 grant by the A. W. Mellon Educational and Charitable Trust, a core curriculum in its college. This curriculum will represent a broader general education as a basis for careers.

The new program will involve the establishment of four basic courses for beginning students: the communication skills—instruction and practice in writing, speaking, reading, and listening; the humanities—the first steps toward an understanding of the nature and achievements of man as revealed in his language, literature, philosophy, religion, music, and fine arts; the social sciences—a study of man's social institutions based on materials from history, government, economics, sociology, and geography; and the natural sciences—an introduction to scientific principles and the methods of scientific inquiry, using materials from astronomy, biological sciences, biophysics, chemistry, geology, physics, psychology, and mathematics.

INTEGRATION OF LIBERAL ARTS AND NURSING EDUCATION

A SCHOOL OF NURSING has been established at DePauw University (Greencastle, Ind.) and will begin operation next September. Under a cooperative arrangement with Methodist Hospital in Indianapolis, students in the DePauw School of Nursing will receive their final two years of clinical experience at the hospital. The nursing program will cover four calendar years, with students enrolled in DePauw during the entire period but residing on the campus in Greencastle only during the freshman and sophomore years.

During the two-year period on the DePauw campus, students will study basic communication, bacteriology, chemistry, nutrition, college algebra, human anatomy, human physiology, introductory psychology, philosophy or religion, abnormal psychology, physical education, and elective subjects. The educational experience at the hospital will be integrated with the academic program at DePauw; and the entire curriculum will be on a collegiate level. Each graduate of the four-year course will receive the bachelor of science in nursing degree and will be eligible to become a registered nurse.

PAPERS OF W. W. CHARTERS

THE OFFICIAL correspondence and other papers of the late Werrett Wallace Charters, internationally known educationist, have been deposited in the Ohio State University Libraries. The collection, amounting to about 50 letter-file drawers, has been sorted and arranged by subject content in order to make them of maximum usefulness to scholars engaged in research on the history of education.

Dr. Charters' work was concerned with curriculum, the Payne Fund study of the effect of

movies on juvenile audiences, character education, religious education, vocational education, and education of women. The collection includes extensive material on each of these areas, as well as on his long work at the Ohio State University Bureau of Educational Research. The library has provided a card file, listing the headings and summary contents of each folder, to facilitate use of the collection. More detailed information of the contents of the collection may be obtained from the Ohio State University Libraries.

MOSCOW UNIVERSITY'S 200TH ANNIVERSARY

UNESCO—On May 7, 1955, the University of Moscow celebrated the 200th anniversary of its founding by the Russian scientist and writer Mikhail Vasilyevich Lomonosov. The university, which started its activities with three faculties and 10 chairs, today has 12 faculties and 210 chairs. Names of international renown such as Lermontov, Belinsky, and Herzen are connected with its history. The university has recently moved into new buildings in the Soviet capital.

Notes and News

Appointments, Promotions, Resignations, Retirements

The Rev. William C. Gianera, S.J., president, University of Santa Clara (Calif.), 1945–51, and dean, College of Arts and Sciences, Loyola University of Los Angeles, has returned to the University of Santa Clara as assistant to the president. The Rev. Thomas Flynn, S.J., is joining the faculty as professor of philosophy.

Walter Bartky, dean, division of the physical sciences, University of Chicago, named vice-president in charge of special scientific programs.

Aurora (Ill.) College announces the following promotions: Gerald F. Richardson to the vice-presidency in charge of public relations; James E. Crimi to deanship of the college; Clyde E. Hewitt to registrar; and Crystal R. Janaskie to assistant registrar.

Gordon A. Sabine, dean, School of Journalism, University of Oregon, is the dean of the new School of Communication Arts, Michigan State University. The establishment of the school, July 1, coincided with the effective date of the change in name of Michigan State College to Michigan State University.

John C. Hayward, director of admissions and student relations, Girard College, appointed dean of student affairs, Bucknell University (Lewisburg, Pa.), effective Sept. 1.

Paul Weber, professor of chemical engineering and director, School of Chemical Engineering, Georgia Institute of Technology (Atlanta), named dean of faculties.

Bayrd Still succeeds Joseph H. Park as head, department of history, Graduate School of Arts and Science, and chairman of the department, University College of Arts and Science, New York University.

J. H. McLain, Martha Van H. Taber, Alba H. Warren, Jr., and Gerda Blumenthal appointed professor of chemistry and head of the department, associate professor of economics and head of the department, associate professor of English, and assistant professor of French, respectively, Washington College (Chestertown, Md.). Retiring with emeritus rank are: Clarence J. Black, professor of chemistry, and O. B. Bennett, associate professor of mathematics. Daniel Z. Gibson, president of the college, elected president, Association of Independent Colleges in Maryland, succeeding Lowell S. Ensor, president, Western Maryland College (Westminster).

Warren G. Steel, assistant professor of geology, North Carolina State College, named head, department of geology, Marietta (Ohio) College. William L. Power appointed assistant professor of English. Among the faculty promotions are: to associate professorships, Robert Taylor (history), Wen-yu Cheng (economics), and Herschel Grose (chemistry); and to assistant professorships, Phyllis B. Drumm (English) and William Fay (art).

Robert S. Alexander, associate professor of physiology, Medical College, University of Georgia, appointed chairman, department of physiology, Albany (N. Y.) Medical College, Union University.

Morton W. Bloomfield named Berg Professor of English and American Literature, New York University's Washington Square College of Arts and Science, 1955–56.

Faculty promotions at Cornell University include: to professorship of child development and family relationships, Edward C. Devereux, Jr.; to associate professorships, Robert M. Adams (English), John M. Echols (modern languages), Richard I. Fricke (law), and John Harding (child development and family relationships).

Robert F. Winch, Francis L. K. Hsu, and Ray L. Watterson promoted to professorships of sociology, anthropology, and biological sciences, respectively, Northwestern University (Evanston, Ill.), effective Sept. 1.

Burton L. Henke, Ray Frazer, and Gordon D. Kaufman advanced in rank to associate professorship of physics and to assistant professorships of English, respectively, Pomona College (Cláremont, Calif.).

Laurence A. Michel, Jr., John T. Kilbridge, and Thomas P. Imse appointed associate professor of English and assistant professors of education and of sociology, respectively, Canisius College (Buffalo, N. Y.).

Frank J. Schwartz named assistant professor of biology, West Virginia University. Appointments as instructors include: Lucille A. Schmieder (biology), Mortimer Levine (history), and Lawrence W. Fox (psychology).

Joseph A. Dowling, Richard G. Chandler, and Theodore P. Wright, Jr., appointed instructors in cultural heritage, economics, and government and economics, respectively, Bates College (Lewiston, Me.).

The following instructors appointed at Smith College (Northampton, Mass.): Harland A. Carter, Jr. (classics), David C. Huntington (art), Jacques Barchilon (French), Mae Jean Engen (physical education), and Harvey Burdick (psychology).

G. Lester Anderson, dean of administration, University of Buffalo (N. Y.), has assumed duties as executive secretary, New York State Committee of the White House Conference on Education.

Theodore Andersson, associate director, Yale University's Master of Arts in Teaching Program, on leave of absence to serve for one year as associate director, Foreign Language Program, Modern Language Association of America. He will assume his duties on Sept. 1.

Loren Brink of the University of Nevada department of English appointed national co-chairman, Educational Testing Service reading committee, Princeton University. He will assist in establishing policy for the new national movement to improve reading skills of adults.

F. Kenneth Brasted will resign on Aug. 31 as national education director, National Association of Manufacturers, to become the first president of the new University of Dallas (Tex.). The four-year, coeducational Catholic institution, operated by the Sisters of St. Mary of Namur, will be open to students of all faiths in Sept., 1956.

Recent Deaths

The Rev. Brother William B. Cornelia, first president, Iona College (New Rochelle, N. Y.), July 5.

Wendell M. Latimer, 62, former dean, College of Chemistry, University of California (Berkeley), July 6.

RECENT *Publications*

BOYANUS, S. C., *Russian Pronunciation.*, pp. 322. Harvard University Press, Cambridge, Mass. 1955. $7.50.

•

BROWN, STANLEY B., MARY L. LYDA, AND CARTER V. GOOD (compilers). *Research Studies in Education, 1953,* pp. 64. Phi Delta Kappa, Homewood, Ill. 1955. $3.50.

•

CAVAN, RUTH SHONLE, *Criminology,* pp. 718, $6.00; DOHRS, FRED E., LAWRENCE M. SOMMERS, AND DONALD R. PETTERSON, *Outside Readings in Geography,* pp. 805, $2.95; JOHNSON, CLAUDIUS O., *American National Government,* fourth edition, pp. 750, $5.75; JOHNSON, CLAUDIUS O., *American Government: National, State and Local,* second edition, pp. 1004, $6.50; MELLON, M. G., *Quantitative Analysis: Methods of Separation and Measurement,* pp. 694, $6.50; PACE, DONALD M., AND BENJAMIN W. MCCASHLAND, *College Physiology,* pp. 615, $5.50; SHAW, PHILLIP B., *Effective Reading and Learning,* pp. 447, $2.95; SMITH, LYNN T., *et al., Social Problems,* pp. 517, $4.75. Thomas Y. Crowell Co., New York 16. All 1955 editions.

•

The Chemical Industry: Facts Book. Second edition. Pp. 148. Manufacturing Chemists' Association, Washington, D. C. 1955. $1.00.

•

COULTON, THOMAS E., *A City College in Action: Struggle and Achievement at Brooklyn College,* pp. 233, $3.50; FLESCH, RUDOLF, *Why Johnny Can't Read and What You Can Do about It,* pp. 222, $3.00; MONTAGU, M. F. ASHLEY, *The Direction of Human Development: Biological and Social Bases,* pp. 404, $5.00; PADOVER, SAUL K. (editor), *The Washington Papers: Basic Selections from the Public and Private Writings of George Washington,* pp. 430, $5.00; SMITH, HUSTON, *The Purposes of Higher Education,* pp. 218, $3.50; STEWART, S. MAXWELL (editor), *The Growing Family,* pp. 264, $3.50. Harper & Bros., New York 16. All 1955 editions.

•

The Cost of a Good Educational Program in Pennsylvania. Pp. 17. Commonwealth of Pennsylvania, Department of Public Instruction, Harrisburg. 1955.

•

DUNN, LLOYD M., WILLIAM C. GEER, AND WINFRED L. GODWIN. *Teachers for the South's Handicapped Children.* Pp. 33. Southern Regional Education Board, 830 West Peachtree Street, N. W., Atlanta, Ga. 1955.

•

EHLERS, HENRY (editor), *Crucial Issues in Education,* pp. 277, $2.25; FINK, ARTHUR E., EVERETT E. WILSON, AND MERRILL B. CONOVER, *The Field of Social Work,* pp. 630, $5.25.

Henry Holt & Co., New York 17. Both 1955 editions.

•

ELLENWOOD, JAMES L. *Questions Parents Ask.* Pp. 155. E. P. Dutton and Co., New York 10. 1955. $2.50.

•

ELWES, R. H. M. (translator), *The Chief Works of Benedict De Spinoza,* vol. 1: *Political Treatise,* pp. 387; vol. 2: *Selected Letters,* pp. 420, $1.50 each; HALDANE, E. S., AND G. R. T. ROSS (translators), *The Philosophical Works of Descartes,* vol. 1, pp. 452; vol. 2, pp. 380. $1.95 each. Dover Publications, New York 10. 1955 editions.

•

FEINGOLD, NORMAN S. (editor). *Words for Work.* Pp. 140. Jewish Vocational Service of Greater Boston, Mass. 1955. $1.00.

•

FRENCH, WILLIAM M. *Education for All: An Introduction to American Education.* Pp. 383. Odyssey Press, New York 3. 1955. $3.50.

•

GARRISON, KARL C., AND J. STANLEY GRAY, *Educational Psychology,* pp. 505, illustrated, $5.00; KLUBERTANZ, GEORGE P., *Introduction to the Philosophy of Being,* pp. 300, $3.00; THOMAS, CLEVELAND A., *Language Power for Youth,* pp. 269, $3.25. Appleton-Century-Crofts, New York 1. 1955 editions.

•

GRAMBS, JEAN D. *Human Relations and Audio-Visual Materials.* Pp. 70. National Conference of Christians and Jews, New York 19. 1955. 25 cents.

•

HALL, A. R. *The Scientific Revolution, 1500–1800: The Formation of the Modern Scientific Attitude.* Pp. 390. Longmans, Green, New York 3. 1954.

•

HAMILTON, THOMAS H., AND EDWARD BLACKMAN (editors). *The Basic College of Michigan State.* Pp. 127. Michigan State College Press, East Lansing. 1955. $2.75.

•

Handbook on International Study, pp. 350, $3.00; *Report on the National Conference on Exchange of Persons.* Pp. 84. 50 cents. Institute of International Education, New York 21. 1955 editions.

•

HANNA, LAVONE A., GLADYS L. POTTER, AND NEVA HAGAMAN. *Unit Teaching in the Elementary School.* Pp. 592. Rinehart & Co., New York 16. 1955. $5.50.

•

HARDIN, CHARLES M. *Freedom in Agricultural Education.* Pp. 275. University of Chicago Press, Ill. 1955. $4.50.

•

HARRIS, THEODORE L., AND G. LAWRENCE RARICK. *Pressure Patterns in Handwriting.* Pp. 55. Committee for Research in Handwriting, Department of Education, University of Wisconsin, Madison. 1955.

HARTZ, LOUIS, *The Liberal Tradition in America,* pp. 329, $4.75; SHAFER, BOYD C., *Nationalism: Myth and Reality,* pp. 319, $5.00. Harcourt, Brace & Co., New York 17. 1955 editions.

•

HAYES, BERLETT H., JR. *The Naked Truth and Personal Vision: A Discussion about the Length of the Artistic Road.* Pp. 112. Illustrated. Addison Gallery of American Art, Phillips Academy, Andover, Mass. 1955. $3.75.

•

Health Supervision of Young Children. Pp. 180. American Public Health Association, New York 19. 1955. $2.00.

•

HIMES, NORMAN E. *Your Marriage.* Pp. 384. Rinehart and Co., New York 16. 1955. $4.00.

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